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ABSTRACT

The inability of schools to promote students' thinking is currently the subject of a great deal of attention. Teachers' point of view with regard to teaching thinking has been missing in this attention. This study was undertaken to investigate teachers' attitudes toward teaching thinking. A questionnaire was distributed to 600 public elementary and secondary school teachers in New York State. A total of 285 usable questionnaires was returned. Findings indicated that teachers feel responsible for improving student thinking in their classrooms, and they demonstrate an interest in learning more about teaching thinking. They have a positive view of their subject area in the sense that it contributes to their efforts to promote thinking in class and, in turn, it requires students to use complex thinking often. Results also suggest that pre- and inservice training in teaching thinking might have a positive influence on teachers' perceptions of their ability to control the classroom when open-ended discussion takes place. Some teachers do not perceive many teacher-related barriers to teaching thinking; however, they point to certain barriers on the students' part such as concerns about passing tests and lack of confidence in their ideas. In addition, some teachers see in students a preference for a structured way of learning and a lack of eagerness to explore new perspectives. Seven tables displaying technical data are included. Contains 8 references. (LL)

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ABSTRACT

Although there has been more attention to teachers' and schools' ability to improve student thinking recently, teachers' point of view with regard to teaching thinking is missing in these efforts. This study was undertaken to investigate, through a survey questionnaire, teachers' attitudes toward teaching thinking. The results indicated that teachers feel responsible for improving student thinking in their classroom, and they are interested in learning more about teaching thinking. They have a positive view of their subject area in the sense that it contributes to their efforts in promotion of thinking in class, and it requires students to use complex thinking often.

Although some teachers do not perceive many teacher-related barriers in teaching thinking, they point to certain barriers on the students' part such as their concern about passing tests and lack of confidence in their ideas. In addition, some teachers see in students a preference for a structured way of learning and lack of eagerness to explore new perspectives.

Finally, significant differences in teachers' attitudes by school level and training in teaching thinking are examined in the study.

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PROMOTING STUDENT THINKING FROM THE PRACTITIONER'S POINT OF VIEW: TEACHERS' ATTITUDES TOWARD TEACHING THINKING

Introduction

The inability of schools to promote students' thinking is currently the subject of a great deal of attention. Educational reports of the early 1980s blamed schools for not giving enough attention to improving thinking skills of students (Boyer, 1983; Goodlad, 1984). Poor writing, reading and mathematics skills have been linked to the failure of schools in improving higher order cognitive skills of students (Beyer, 1987; Chipman and Segal, 1985; The National Assessment of Educational Progress, 1988).

To reverse this trend, many researchers call for the application of a growing body of knowledge and research on thinking to classroom teaching. The recent emergence of a body of research in cognitive psychology promises ways and strategies to improve students' thinking skills. Considerable attention is now being devoted to redesigning of curriculum more conducive to developing thinking skills, or to designing new courses to teach thinking skills directly (Tama, 1989).

Although it is possible to see many programs and studies in the literature on teaching thinking, an understanding of teachers' perceptions of teaching thinking is missing in these efforts and in the literature. How do teachers feel about teaching thinking in their classroom? Do they feel responsible for improving student thinking? What kinds of constraints do they perceive in their efforts? Do they see their subject area as helpful in improving student thinking? In order for the teaching thinking movement which is widespread in the literature to have a real impact on schools, teachers and students, it should be informed by practice. One way to achieve this goal is to examine practitioners' perspectives about teaching thinking.

Few studies have been published so far on teachers' attitudes toward teaching thinking. In one of these studies, Onosko (1989) compared the beliefs of two groups of teachers on instructional goals, definitions of effective thinking and the issue of content coverage. He selected teachers who were considered "outstanding" and teachers considered "less than outstanding" at

promoting students' thinking on the basis of observational data collected in these teachers' classrooms. Interviewing them, Onosko found differences between the two groups of teachers regarding their instructional goals, definitions of thinking and views on the dilemma of depth vs breadth of content coverage. Less than outstanding teachers viewed content acquisition as their primary goal whereas outstanding teachers placed more emphasis on promoting thinking using content as a vehicle. Outstanding teachers offered a more detailed conception of thinking than less than outstanding teachers.

Howell (1987) studied elementary teachers' perceptions of inhibiting factors of teaching thinking. He dealt with constraints in the social structure of schools which discourage opportunity for "critical thinking, dialogue and action" in relation to social studies. Specifically, Howell analyzed the perceptions of teachers on role relations and organizational management in the social structure of the school as a social institution. Collecting data by interviewing 100 classroom teachers in five schools, Howell found that even though there was a need for teachers to be aware of the importance of including social issues and critical thinking processes in the curriculum, there was not enough emphasis on practicing these in the classroom. The reasons indicated were lack of stated goal priority, absence of adequate training, socialization, and perceived bureaucratic constraints.

To further our understanding of teachers' point of view in this field, the current study attempts to examine teachers' attitudes toward teaching thinking. It also looks at possible differences in teachers' attitudes by subject area, sex, school level, teaching experience, educational background, school type and training in teaching thinking.

Method

The data collection instrument used for this study was a three-part survey questionnaire which included questions on theoretical orientations toward thinking, attitudes toward teaching thinking and activities used to improve student thinking in the classroom. This paper reports only data collected on teachers' attitudes. To measure attitudes, statements were written on teachers' perceptions of classroom and school in improving student, responsibility for, ability and interest in teaching thinking, the relevance of subject area, teacher-related constraints, and student-related

constraints in the development of thinking in students. They were presented in the form of item statements in the questionnaire for teachers to endorse on a five-point Likert-type scale from "strongly disagree" to "strongly agree."

The population included all public elementary and secondary school teachers in New York State. A total of 600 subjects was randomly chosen by the Bureau of Educational Data Systems of the New York State Department of Education from all schools across the state. The questionnaires were mailed to the sample in mid-September of 1991. In the first round, 246 completed questionnaires were returned. After reminder postcards were sent, 39 more questionnaires were received. As a result, a total of 285 usable questionnaires were returned (47.5% return rate).

General elementary teachers formed the largest group of respondents (23%). English/language arts, social studies, mathematics and science teachers were represented by somewhat similar percentages of respondents ranging from 13% to 17%, the largest being science teachers. Close to two-fifths of the respondents (38.3%) were elementary teachers (grades K-6), while close to one-third (28.4%) were middle school and a little more than one-fifth (21.4%) were high school teachers. Teachers who responded to the questionnaire were predominantly female (62%), taught at suburban schools (64%), and were experienced teachers (69.2% taught for 11 or more years). The majority had at least a master's degree (83.5%). More than two-fifths (44%) attended at least one workshop or conference on teaching thinking.

Results

One area of interest in the study was teachers' perceptions of school and classroom, and of responsibility for, ability and interest in promoting student thinking. As the percentages in Table 1 indicate, almost all teachers see improving student thinking as an essential responsibility of schools (97% agreeing/strongly agreeing), and feel that student thinking can be improved through classroom instruction (96% agreeing/strongly agreeing).

Table 1, about here

Again, a large majority feel responsible for improving student thinking in their classroom (99% agreeing/strongly agreeing), and are interested in learning more about teaching thinking (96% agreeing/strongly agreeing) (see Table 2). However, only 57% (agreeing/strongly agreeing) report having adequate skills for improving student thinking while 14% (disagreeing/strongly disagreeing) believe that they do not have adequate skills to improve student thinking, and 29% are undecided.

Table 2, about here

Perceptions of subject area in relation to promoting student thinking were also investigated through the study questionnaire. Most teachers (94% agreeing/strongly agreeing) report that their subject area provides them with opportunities for promoting student thinking in class (see Table 3). Again, the majority (81% agreeing/strongly agreeing) feel that their subject area requires students to use complex thinking very often while only 17% (disagreeing/strongly disagreeing) do not feel this way about their subject area.

Table 3, about here

The questionnaire included statements measuring teachers' perceptions of teacher-related constraints in improving student thinking (see Table 4). The majority of the teachers are not concerned about the loss of control in the classroom when open-ended discussion takes place (82% disagreeing/ strongly disagreeing). In addition, the majority do not feel that focusing on improving student thinking causes delay in the progress of a lesson (68% disagreeing/strongly disagreeing), and do not feel comfortable with lecturing and structured discussion most of the time (64% disagreeing/strongly disagreeing). Teachers are divided on the statement dealing with their perceptions of difficulty in improving student thinking. While more than half (57%

disagreeing/strongly disagreeing) do not find improving student thinking difficult, close to one-third (30% agreeing/strongly agreeing) do.

Table 4, about here

Several statements measuring teachers' perceptions of student-related constraints in promoting thinking were also included in the questionnaire (see Table 5). A large majority of teachers agree/strongly agree that students are more concerned about passing tests than improving their thinking (84%), and lack confidence in their ideas (86%). However, only a little more than half of the respondents agree/strongly agree that students are more comfortable with learning in structured ways (55%), and often not eager and enthusiastic about thinking about new ideas and perspectives (56%). Close to one-fourth (22%) disagree/strongly disagree with the former statement and one-third (34%) disagree/ strongly disagree with the latter.

Table 5, about here

These results indicate that teachers see improving student thinking as an essential responsibility both for schools and themselves as teachers. They believe that student thinking can be improved in the classroom, and are interested in learning more about teaching thinking. However, only about three-fifths report having adequate skills for improving student thinking. Teachers have a positive view of their subject area as contributing to thinking. They see it as a good resource which provides them with opportunities to improve student thinking and requires students to use complex thinking often.

The majority are not concerned with loss of classroom control when students discuss issues freely. Rather, they appear to be dissatisfied with lecturing and structured discussion which

allow the teacher to exert more control on class. Most think that focusing on student thinking does not delay a lesson, however, some find improving student thinking difficult.

Teachers point to some constraints related to students, such as students' concern about passing tests and lack confidence in their ideas. In addition, some respondents believe that students are more comfortable with learning in structured ways and often are not eager and enthusiastic about thinking about new ideas and perspectives. As a result, although the majority of the teachers do not see any major teacher-related barriers in their efforts to promote thinking, they perceive certain student-related constraints on the students' part.

Differences in Attitudes by Background Factors

The data on teacher attitudes toward teaching thinking were further analyzed to determine whether teachers presented any significant differences according to subject area, sex, school level, educational background, teaching experience, school type and training in teaching thinking. The results showed that teachers display significant differences in their attitudes by school level and training in teaching thinking.

Differences in attitudes by school level. The relationship between school level and certain attitude variables are significant at the .01 or .05 level (see Table 6). Elementary school teachers indicate that they are not comfortable with lecturing and structured discussion most of the time while middle and high school teachers are undecided on this issue. A Newman-Keuls test indicates that the mean score of elementary school teachers is significantly different from that of those teaching at middle and high schools at the .05 level. There is no significant difference between middle and high school teachers.

Table 6, about here

A similar finding was found in teachers' responses to the statement "Focusing on improving student thinking causes a delay in the progress of a lesson." Elementary and middle school teachers disagree with this statement while high school teachers are uncertain about it. A Newman-Keuls test indicates that elementary teachers' mean score is significantly different from the mean score of high school teachers ($p<.05$). This indicates that elementary teachers are less likely to see any delay when they focus on student thinking than high schools teachers.

Teachers at different school levels also present significant differences with regard to their perceptions of student attitudes toward improving their thinking at the .01 or .05 level. In response to a statement on students' learning styles, high school teachers agree that students are often more comfortable with learning in structured ways while elementary and middle school teachers appear to be undecided on this issue. A Newman-Keuls test shows that the mean score of elementary teachers differs significantly from the mean scores of those at middle and high schools ($p<.05$). This reveals that elementary teachers are less likely to perceive students as more comfortable with structured learning than their counterparts at middle and high schools.

A similar pattern is apparent between school level and teachers' perception of student concern with passing tests. Mean scores indicate that teachers think students are concerned with passing tests at every school level. However, a linear increase in the mean scores by school level tells us that according to teachers, the degree of students' concern about passing tests increases at middle and high school levels. A Newman-Keuls test shows that elementary teachers differ significantly from high school teachers at the .05 level with regard to their perceptions of student concern with the tests.

A similar relation is also present between school level and teachers' responses to the statement "Students are often not eager and enthusiastic about thinking about new ideas and perspectives." High school teachers agree with this statement while elementary and middle school teachers are undecided, and according to a Newman-Keuls test, this difference is significant at the .05 level.

These results suggest that elementary teachers perceive less teacher- and student-related constraints in teaching thinking than their counterparts at middle and high schools. They seem to be more comfortable with open-ended discussion in the classroom, and they have a more positive perception about students attitudes toward higher order thinking.

Differences in attitudes by training in teaching thinking. Attendance at least one workshop or seminar on teaching thinking is significantly related to several attitude variables at the .01 or .05 level (see Table 7). Teachers who report having some kind of training in teaching thinking are more likely to feel that their subject area provides them with opportunities for promoting student thinking than those who had no training. The former think that their subject area requires students to use complex thinking very often while the latter are undecided about this issue. In addition, the former indicate that they have adequate skills to improve student thinking, and that they are not concerned about the loss of control in the classroom when open-ended discussion take place while the latter are undecided on both statements.

Table 7, about here

These results suggest that training in teaching thinking might have a positive influence on teachers' perceptions of their subject area, perceptions of ability to promote student thinking and confidence with classroom control when open-ended discussion takes place.

Discussion

One of the major findings of this study is that a large majority of teachers are enthusiastic about promoting student thinking in their class. They view promotion of thinking as an essential responsibility of schools and teachers. Most believe that student thinking can be improved in the classroom, and are interested in learning more about teaching thinking. The majority have a positive perception of their subject area in the sense that it contributes to their efforts in promotion of thinking in class, and it requires students to use complex thinking often.

Teachers' positive attitudes are also apparent in their reactions to possible difficulties they may face when they focus on student thinking. Although some teachers find it difficult to improve student thinking, the majority are not concerned about loss of control in class and delay in the progress of a lesson when they focus on student thinking. Furthermore, they do not feel comfortable with lecturing and structured discussion most of the time. Although teachers reflect mostly positive attitudes toward improving student thinking, the majority perceive certain barriers on the students' part such as their concern about passing tests and lack of confidence in their ideas. In addition, some teachers see in students a preference for a structured way of learning and lack of eagerness to explore new perspectives.

Lower grade teachers (i.e., K-6) are less likely to be concerned about possible difficulties in improving student thinking and less likely to perceive student-related barriers in their class than upper grade teachers (i.e., 6-12), especially high school teachers. This difference may partly be due to the fact that elementary teachers teach the same students throughout a school day while middle and high school teachers are likely to deal with several different groups of students. This result suggests that elementary teachers may be in a more advantageous position to promote thinking than middle and high school teachers since they are less likely to experience time difficulties and student-related barriers in thinking.

Finally, teachers with some training in teaching thinking have a more positive view of their subject area as contributing to thinking, are more likely to perceive they have adequate skills in promoting student thinking and have confidence in conducting open-ended discussion with students in class than those who had no training. These results indicate that training in teaching thinking is related to a more positive view of subject area in promoting thinking and alternative teaching techniques.

Significant implications can be drawn from these results. Since this study reveals that teachers feel responsible for, are interested in learning more about promoting student thinking in class, and have a positive perception of their subject area as contributing to thinking, teacher educators and administrators might place more emphasis on thinking and deal with teachers'

concerns in this area such as lack of time, strict reliance on a fixed syllabus, lack of adequate administrative support and resources. Most teachers see students' attitudes toward improving their thinking such as lack of interest and a preference for structured learning as barriers in their efforts for promoting thinking in class. This issue needs to be addressed in pre- and in-service education, and teachers should be provided with strategies to overcome this problem. These issues have to be viewed in a broad perspective and addressed in an integrated effort.

A related issue is that teachers at middle and high schools perceive student-related constraints in focusing on thinking more than elementary school teachers. This result suggests that teachers find certain student attitudes detrimental to their efforts for thinking, and this should alert us to the importance of addressing this issue particularly at middle and high school levels. We, as teachers, must be at least partly responsible for making students less interested in learning, less eager to explore new perspectives, and more concerned about passing tests as they are promoted to upper grades. This problem should be studied and addressed so that teachers are better equipped with knowledge and strategies to help students become more interested in improving their thinking. The better we understand the reasons that underlie this problem, the more effective intervention efforts will become to change students' attitudes and to embrace improving thinking as their primary goal in school.

Another finding of this study points to a significant relationship between training in teaching thinking and positive perception of their subject area as contributing to thinking and greater ability and confidence in improving student thinking. Although a causal relationship cannot be made between these variables, it is possible that training in teaching thinking has a positive impact on perceptions of subject area as contributing to thinking and ability and confidence in promoting student thinking. Therefore, pre- and in-service educators might consider including courses on teaching thinking in their curriculum. Teachers are interested in learning more about teaching thinking and are aware of the importance of improving student thinking. So, it appears that they are very receptive to new ideas and strategies in this area.

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Table 1

Degree to Which Respondents Agree With Statements Measuring Teachers' Perceptions of Classroom and School in Promoting Student Thinking (in percentages and means)

	SD	D	U	A	SA	MEAN	N
Improving student thinking is an essential responsibility of schools.	–	1.1	1.4	51.9	45.6	4.42	283
Student thinking can be improved through classroom instruction.	–	.7	3.5	59.4	36.4	4.31	283

SD = Strongly Disagree; D = Disagree; U = Undecided; A = Agree; SA = Strongly Agree.
In this table and the following ones, N's for each item vary due to missing responses, and items in the table are listed in order of means.

Table 2

Degree to Which Respondents Agree With Statements Measuring Teachers' Perceptions of Responsibility for, Ability and Interest in Promoting Student Thinking (in percentages and means)

	SD	D	U	A	SA	MEAN	N
As a teacher, I feel responsible for improving student thinking in my classroom.	-	-	1.1	50.9	48.1	4.47	285
I am interested in learning more about teaching thinking.	.4	1.1	2.5	52.3	43.9	4.38	285
I have adequate skills to improve student thinking.	.4	13.7	28.8	50.2	7.0	3.50	285

SD = Strongly Disagree; D = Disagree; U = Undecided; A = Agree; SA = Strongly Agree.

Table 3

Degree to Which Respondents Agree With Statements Measuring Teachers' Perceptions of Their Subject Area in Promoting Student Thinking (in percentages and means)

	SD	D	U	A	SA	MEAN	N
My subject area provides me with opportunities for promoting thinking in students.	–	3.2	3.2	56.1	37.5	4.28	285
My subject area requires students to use complex thinking very often.	1.4	15.5	2.5	46.5	34.2	3.97	284

SD = Strongly Disagree; D = Disagree; U = Undecided; A = Agree; SA = Strongly Agree.

Table 4

Degree to Which Respondents Agree With Statements Measuring Teachers' Perceptions of Teacher-Related Constraints in Promoting Thinking (in percentages and means)

	SD	D	U	A	SA	MEAN	N
I am concerned about the loss of control in the classroom when open-ended discussion takes place.	30.2	51.6	5.3	11.2	1.8	2.03	285
Focusing on improving students' thinking causes delay in the progress of a lesson.	18.9	49.5	12.3	17.9	1.4	2.33	285
I feel comfortable with lecturing and structured discussion most of the time.	18.2	45.6	10.5	23.5	2.1	2.46	285
I find it difficult to improve student thinking in my classroom.	14.0	43.2	13.3	27.0	2.5	2.61	285

SD = Strongly Disagree; D = Disagree; U = Undecided; A = Agree; SA = Strongly Agree.

Table 5

Degree to Which Respondents Agree With Statements Measuring Teachers' Perceptions of Student-Related Constraints in Promoting Thinking (in percentages and means)

	SD	D	U	A	SA	MEAN	N
Students are more concerned about passing tests than improving their thinking.	1.8	7.0	7.0	55.8	28.4	4.02	285
Students often lack confidence in their ideas.	1.1	7.0	5.3	66.9	19.7	3.97	284
Students are often more comfortable with learning in structured ways.	2.8	19.1	23.3	46.6	8.1	3.38	283
Students are often not eager and enthusiastic about thinking about new ideas and perspectives.	9.9	23.9	10.6	44.4	11.3	3.23	284

SD = Strongly Disagree; D = Disagree; U = Undecided; A = Agree; SA = Strongly Agree.

Table 6

Mean and Standard Deviation Scores for Attitudes Toward Teaching Thinking by School Level

	SCHOOL LEVEL	MEAN	SD	N
I feel comfortable with lecturing and structured discussion most of the time.	Elementary School	2.19	1.05	109
	Middle School	2.61	1.09	81
	High School	2.59	1.17	61
			F(2,248)=4.40, p=.0132	
Focusing on improving student thinking cause delay in the progress of a lesson.	Elementary School	2.12	.96	109
	Middle School	2.43	1.11	81
	High School	2.52	.98	61
			F(2,248)=3.88, p=.0219	
Students are often more comfortable with learning in structured ways.	Elementary School	3.14	.99	109
	Middle School	3.44	.99	81
	High School	3.62	.88	61
			F(2,248)=5.46, p=.0048	
Students are more concerned about passing tests than improving their thinking.	Elementary School	3.85	.99	109
	Middle School	4.04	.93	81
	High School	4.25	.65	61
			F(2,248)=3.77, p=.0245	
Students are often not eager and enthusiastic about thinking about new ideas and perspectives.	Elementary School	2.97	1.28	109
	Middle School	3.15	1.23	81
	High School	3.62	1.07	61
			F(2,248)=5,68, p=.0039	

Mean scores are based on a five-point Likert scale where 1= strongly disagree, 2=disagree, 3=undecided, 4=agree, 5=strongly agree.

Table 7

Mean and Standard Deviation Scores for Attitudes Toward Teaching Thinking by Attendance at Workshops in Teaching Thinking

	ATTENDANCE	MEAN	SD	N
My subject area provides me with opportunities for promoting thinking in students.	Attended	4.43	.63	125
	Did not attend	4.16	.69	158
			t(281)=3.26, p=.001	
My subject area requires students to use complex thinking very often.	Attended	4.14	.95	125
	Did not attend	3.31	1.12	158
			t(281)=2.25, p=.011	
I have adequate skills to improve student thinking.	Attended	3.66	.77	125
	Did not attend	3.35	.85	158
			t(281)=3.18, p=.002	
I am concerned about the loss of control in the classroom when open-ended discussion takes place.	Attended	1.36	.91	125
	Did not attend	2.71	1.01	158
			t(281)=2.70, p=.007	

Mean scores are based on a five-point Likert scale where 1= strongly disagree, 2=disagree, 3=undecided, 4=agree, 5=strongly agree.